

AMENDMENTS TO THE CLAIMS


This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended): A microdevice, which microdevice comprises:
 - a) a substrate; and
 - b) a photorecognizable coding pattern on said substrate; and
 - c) a binding partner that is capable of binding to a moiety to be manipulated,

wherein said microdevice does not comprise an anodized metal surface layer.

2. (Original): The microdevice of claim 1, wherein the substrate comprises a material that is selected from the group consisting of a silicon, a plastic, a glass, a ceramic, a rubber, a polymer and a combination thereof.

3. (Original): The microdevice of claim 2, wherein the silicon is silicon dioxide or silicon nitride.



4. (Original): The microdevice of claim 1, wherein the substrate comprises a surface that is hydrophobic or hydrophilic.

5. (Currently Amended): The microdevice of claim 1, wherein the shape of the substrate is selected from the group consisting of sphere, square, rectangle, triangle, circular disc, cube-like shape, cube, rectangular parallelepiped (cuboid), cone, cylinder, prism, pyramid; and right-angled circular cylinder ~~and other regular or irregular shape.~~

Claim 6 (Original): The microdevice of claim 1, wherein the thickness of the substrate is from about 0.1 micron to about 10 microns.

Claim 7 (Original): The microdevice of claim 5, wherein the substrate is a rectangle having a surface area from about 10 squared-microns to about 10,000 squared-microns.

Claim 8 (Original): The microdevice of claim 5, wherein the substrate is a circular disc having a diameter from about 3 microns to about 500 microns.

Claim 9 (Original): The microdevice of claim 5, wherein the substrate is in a cube-like shape having a side width from about 10 microns to about 100 microns.

Claim 10 (Currently Amended): The microdevice of claim 5, wherein the substrate is in an irregular shape having a ~~single dimension~~ largest dimension from about 1 micron to about 500 microns.

Claim 11 (Original): The microdevice of claim 1, wherein the substrate comprises a silicon layer and a metal layer.

Claim 12 (Original): The microdevice of claim 11, wherein the metal layer is an aluminum layer.

Claim 13 (Original): The microdevice of claim 11, wherein the metal layer comprise a magnetic material.

Claim 14 (Original): The microdevice of claim 11, wherein the metal layer comprise nickel metal or CoTaZr (Cobalt-Tantalum-Zirconium) alloy.

Claim 15 (Original): The microdevice of claim 1, wherein the photorecognizable coding pattern is the material composition of the substrate itself, a hole in the substrate or a

substance immobilized on the substrate, said substance having an optical refractive property that is different from the optical refractive property of the substrate.

Claim 16 (Original): The microdevice of claim 15, wherein the versatility of the photorecognizable coding pattern is caused by the shape, number, position distribution, optical refractive property, material composition, or a combination thereof, of the substrate, the hole(s), or the substance(s) immobilized on the substrate.

Claim 17 (Original): The microdevice of claim 15, wherein the photorecognizable coding pattern comprises a plurality of the holes and/or a plurality of the substances.

Claim 18 (Original): The microdevice of claim 1, wherein the photorecognizable coding pattern is fabricated or microfabricated on the substrate.

Claim 19 (Original): The microdevice of claim 1, wherein the photorecognizable coding pattern is lithographically patterned.

Claim 20 (Original): The microdevice of claim 19, wherein the lithographical pattern is selected from the group consisting of photolithography, electron beam lithography and X-ray lithography.

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Claim 21 (Original): The microdevice of claim 15, wherein the substance is deposited on the substrate.

Claim 22 (Currently Amended): The microdevice of claim 15, wherein the substance is ~~comprised~~ contained within the substrate.

Claim 23 (Original): The microdevice of claim 15, wherein the substance is deposited by evaporation or sputtering.

Claim 24 (Cancelled)

Claim 25 (Currently Amended): The microdevice of claim 24~~1~~, wherein the binding partner specifically binds to the moiety.

Claim 26 (Currently Amended): The microdevice of claim 24~~1~~, wherein the binding partner is selected from the group consisting of a cell, a cellular organelle, a virus, a molecule, ~~and an aggregate of a cell, a cellular organelle, a virus and/or a molecule, and a ~~or~~-complex thereof of a cell, a cellular organelle, a virus and/or a molecule.~~

Claim 27 (Currently Amended): The microdevice of claim 24~~1~~, which comprises a plurality of binding partners, each binding partner is capable of binding or specifically binding to a different moiety to be manipulated.

Claim 28 (Original): The microdevice of claim 1, further comprising an element that facilitates and/or enables manipulation of the microdevice and/or a moiety/microdevice complex.

Claim 29 (Original): The microdevice of claim 28, wherein the element is selected from the group consisting of a magnetic material, a conductive or insulating material, a material having high or low acoustic impedance and a charged material.

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Claim 30 (Original): The microdevice of claim 28, wherein the element facilitates and/or enables manipulation of the microdevice and/or a moiety/microdevice complex by a physical force selected from the group consisting of a dielectrophoresis, a traveling-wave dielectrophoresis, a magnetic, an acoustic, an electrostatic, a mechanical, an optical radiation and a thermal convection force.

Claim 31 (Original): The microdevice of claim 28, which comprises a plurality of the elements, each of the elements facilitates and/or enables manipulation of the microdevice and/or the moiety/microdevice complex by a different physical force.

Claim 32 (Currently Amended): The microdevice of claim 241, further comprising an element that facilitates and/or enables manipulation of the microdevice and/or the moiety/microdevice complex.


Claim 33 (Original): The microdevice of claim 1, further comprising a detectable marker or a molecular tag.

Claim 34 (Original): The microdevice of claim 33, wherein the detectable marker is a dye, a radioactive substance or a fluorescent substance.

Claims 35-55 (Withdrawn)

Claim 56 (Original): A kit for manipulating a moiety, which kit comprises:

- a) a microdevice comprising a substrate, a photorecognizable coding pattern on said substrate and a binding partner that is capable of binding to a moiety to be manipulated, wherein said microdevice does not comprise an anodized metal surface layer; and
- b) a chip on which a moiety-microdevice complex can be manipulated.

 Claim 57 (Currently Amended): The kit of claim 56, further comprising an instruction(s) for coupling the moiety to the microdevice and/or an instruction for manipulating the moiety-microdevice complex on the chip.

Claims 58-66 (Withdrawn)

Claim 67 (Original): An array for detecting moieties, which array comprises a plurality of microdevices placed or immobilized on a surface, each of said microdevices comprises a photorecognizable coding pattern on a substrate and a binding partner that is capable of binding to a moiety to be detected, wherein at least one of said microdevices does not comprise an anodized metal surface layer.

Claim 68 (Original): The array of claim 67, wherein the binding partners specifically bind to the moieties.

Claims 69-91 (Withdrawn)

Claim 92 (Original): The microdevice of claim 1, which does not comprise a porous surface.

Claim 93 (Original): The microdevice of claim 1, which comprises a metal layer and a non-metal surface layer.

Claim 94 (Original): The microdevice of claim 1, which comprises a hole as the photorecognizable coding pattern and said hole does not penetrate through the entire depth of the substrate.

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Claim 95 (Original): The microdevice of claim 28, wherein the element facilitates and/or enables manipulation of the microdevice and/or a moiety/microdevice complex by a physical force that is not a magnetic force.

Claims 96-114(Withdrawn)

Claim 115 (New): The microdevice of claim 1, which does not comprise a microprocessor.
